

- 24 -

What is claimed is:

1. A cross-flow cooling tower comprising:

a frame assembly unitarily molded from a plastic material wherein said frame assembly comprises opposed top and bottom walls, opposed side walls extending between said top and bottom walls, opposed ends extending between said top and bottom walls;

a vertical stack forming an exhaust port and extending vertically from said top wall; and

a top cover, molded from a plastic material.
2. The cross-flow cooling tower according to claim 1, wherein said top cover projects outwardly and downwardly from said vertical stack.
3. The cross-flow cooling tower according to claim 1, wherein said top cover comprises two pieces.
4. The cross-flow cooling tower according to claim 1, wherein said side walls and said ends are unitarily connected to said top wall to form a hot liquid distributor having a plurality of spaced apart apertures and/or nozzles oriented to deliver hot liquid to be cooled.
5. The cross-flow cooling tower according to claim 1, wherein said top cover comprises a liquid inlet.

- 25 -

6. The cross-flow cooling tower according to claim 4, further comprising at least one cooling air current generator for directing air through said exhaust port.

7. The cross-flow cooling tower according to claim 1, wherein said top cover is attached to said hot liquid distributor by a fastener.

8. The cross-flow cooling tower according to claim 1, wherein said side walls and said opposed ends are connected to said bottom wall to form a liquid collection basin disposed below said hot liquid distributor.

9. The cross-flow cooling tower according to claim 1, further comprising a supplemental support structure that provides support to said frame assembly.

10. The cross-flow cooling tower according to claim 9, wherein said supplemental support structure comprises steel members.

11. The cross-flow cooling tower according to claim 1, further comprising an upright fill structure including a plurality of fill elements and presenting an upright air inlet face, an opposed upright air outlet face, and an upper face extending transversely between said inlet and outlet faces.

- 26 -

12. The cross-flow cooling tower according to claim 11, further comprising a cooling air current generator operable to produce cooling air currents which enter said fill structure via said inlet face and exit said fill structure both laterally via said outlet face and upwardly via said upper face.

13. The cross-flow cooling tower according to claim 11, further comprising a drift eliminator located adjacent to said upright air outlet face of said fill structure.

14. The cross-flow cooling tower top according to claim 4, further comprising a flow splitter that divides the flow of incoming liquid.

15. The cross-flow cooling tower according to claim 14, wherein said flow splitter is shaped like an inverted "V".

16. A frame assembly for a cooling tower comprising:
a shell unitarily molded from plastic material, wherein said shell comprises opposed top and bottom walls, opposed side walls extending between said top and bottom walls, and opposed end walls extending between said top and bottom walls.

- 27 -

17. The frame assembly according to claim 16, where said top wall further comprises at least one opening formed therein for mounting an air current generator.

18. The frame assembly according to claim 16, wherein said side walls are aligned substantially perpendicular to said top and bottom walls.

19. The frame assembly according to claim 16, wherein said end walls are aligned substantially perpendicular to said top and bottom walls.

20. The frame assembly according to claim 16, wherein said top, bottom, side and end walls intersect to define an interior of said frame assembly.

21. The frame assembly according to claim 16, wherein said side walls and said end walls are unitarily connected to said top wall to form a hot liquid distributor, said distributor having a plurality of spaced apart apertures and/or nozzles oriented to deliver hot liquid to be cooled.

22. The frame assembly according to claim 16, wherein said side walls and said end walls are unitarily connected to said bottom wall to form a liquid collection basin disposed below said hot liquid distributor.

- 28 -

23. The frame assembly according to claim 16, wherein said end walls are removable and are shaped as cooling tower covers.

24. The frame assembly according to claim 16, wherein at least a portion of said end walls are shaped as louvers.

25. A cross-flow cooling tower comprising:
a frame assembly unitarily molded from a plastic material wherein said frame assembly comprises opposed top and bottom walls, opposed side walls extending between said top and bottom walls, opposed ends extending between said top and bottom walls;
a vertical stack forming an exhaust port and extending vertically from said top wall; and
support members that provide support to said frame assembly.

26. The cross-flow cooling tower according to claim 25, further comprising louvers that are formed in said opposed ends of said frame assembly.

27. The cross-flow cooling tower according to claim 25, further comprising a top cover, molded from a plastic material.

- 29 -

28. A method for assembling a cooling tower comprising the step of:
unitarily molding a frame assembly from a plastic material wherein the frame assembly comprises opposed top and bottom walls, opposed side walls extending between the top and bottom walls, and opposed end walls extending between the top and bottom walls, shaped as cooling tower covers.

29. A method according to claim 28, further comprising the step of removing the end walls to form a pair of cooling tower covers.

30. A method according to claim 29, further comprising the step of the attaching the removed cooling tower covers to the frame assembly over the top wall.

31. The method of claim 29, wherein the cutting step uses a laser, a hot edge, abrasion, high pressure water and/or a sharp edge.

32. The method of claim 27, wherein the frame assembly further comprises a metal support structure.

33. The method of claim 32, wherein the support structure comprises steel members.

- 30 -

34. A method for assembling a cooling tower comprising the step of:
unitarily molding a frame assembly from a plastic material wherein the frame assembly comprises opposed top and bottom walls, opposed side walls extending between the top and bottom walls, and opposed end walls extending between the top and bottom walls, shaped as louvers.

35. A cross-flow cooling tower comprising:
a frame assembly unitarily molded from a plastic material wherein said frame assembly comprises opposed top and bottom walls, opposed side walls extending between said top and bottom walls, opposed ends extending between said top and bottom walls;
a vertical stack forming an exhaust port and extending vertically from said top wall; and
means for providing supplemental support to said frame assembly.